

US Claims

1. A method of generating a water spray comprising ejecting water under pressure from a nozzle opening to form a water stream and providing a gas flow alongside the ejected water stream travelling in generally the same direction, the relative velocities of the water stream and the gas flow being such that, at a distance of 1m from the nozzle opening the volume median diameter of the water droplets is in the range of 0.5 to 2mm.

2. A method according to claim 1 wherein the ratio of the velocity of the gas flow to the velocity of the water stream immediately downstream of the nozzle opening is in the range 0.5 to 2.

3. A method of generating a water spray comprising ejecting water under pressure from a nozzle opening to form a water stream and providing a gas flow alongside the ejected water stream travelling in generally the same direction, the ratio of the velocity of the gas flow to the velocity of the water stream immediately downstream of the nozzle opening being in the range 0.5 to 2.

4. A method according to claim 3 wherein said velocity ratio is in the range of 0.75 to 1.5, preferably 0.8 to 1.2.

5. A method according to claim 1 wherein the volume median diameter of the water droplets at 1m from the

nozzle opening is in the range 0.5 to 1.5mm.

6. A method according to claim 1 wherein the average water droplet velocity at the centre of the spray at 1m from the nozzle opening is not more than 35m/s, preferably not more than 30m/s

7. A method according to claim 1 wherein the average water droplet velocity at the centre of the spray at 1m from the nozzle opening is not less than 15m/s, preferably not less than 20m/s.

8. A method according to claim 1 wherein the water flow rate is in the range 14 to 28 l/min.

9. A method according to claim 1 wherein the volumetric ratio of the gas flow to the water stream is at least 100, preferably at least 200.

10. A method according to claim 1 wherein the volumetric ratio of the gas flow to the water stream is not more than 600.

11. A method according to claim 1 wherein the gas flow is an air flow.

12. A method of cleaning a hard surface comprising directing at the surface a water spray generated by a method according to claim 1.

13. Apparatus for generating a water spray, having a water spray nozzle with an opening for the ejection of a water stream, means for providing a flow of pressurised water to the nozzle opening, a gas flow tube surrounding the nozzle opening and extending downstream thereof to an open end, and means for providing a gas flow along the gas flow tube alongside the water stream ejected from the nozzle opening, wherein the ratio of the cross sectional areas of said opening of the nozzle and of the gas flow tube at the location of the nozzle is in the range $1/50$ to $1/600$, preferably $1/100$ to $1/400$.

14. Apparatus according to claim 13 adapted and arranged to provide a flow rate of water of at least 14 l/min.

15. Apparatus according to claim 13 wherein the minimum internal cross-section dimension of the gas flow tube at the nozzle opening and downstream thereof is at least 30mm, preferably at least 40mm.

16. Apparatus according to claim 13 wherein length of the gas flow tube downstream of the nozzle opening is in the range 1 to 3 times the average cross-sectional dimension of the gas flow tube at the location of the nozzle opening.

17. Apparatus according to claim 13 wherein the gas flow is an air flow.